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EPA-R6-2013-010211

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202

September 30, 1988

MEMORANDUM

Subject: Transmittal of RCRA Facility Assessment Report

From: Bill Luthans
Technical Section (6H-CT)

To: William K. Honker, Chief
Permit Section (6H-CP)

Attached please find a copy of the following RCRA Facility Assessment (RFA) report:

° Facility Name: Koppers

° EPA ID Number: TXD008089021

The RFA report for this facility is currently under review in the Technical Section. A copy of the RFA Evaluation will be sent to you as soon as it is completed.

Attachment

A.T. Kearney, Inc.
222 South Riverside Plaza
Chicago, Illinois 60606
312 648 0111

Management
Consultants

A.T. KEARNEY

September 23, 1988

Mr. Tom Clark
Regional Project Officer
U.S. Environmental Protection Agency
Region VI
1445 Ross Avenue
Dallas, Texas 75202-2733

Reference: EPA Contract No. 68-01-7374; Work Assignment No. R26-05-60; Koppers Company, Inc.; EPA ID No.TXD 008089021; PR/VSI Report

Dear Mr. Clark:

Enclosed is the Preliminary Review/Visual Site Inspection (PR/VSI) report for the Koppers Company, Incorporated facility in Houston, Texas. The PR/VSI resulted in the identification of 23 Solid Waste Management Units (SWMUs) and two Areas of Concern (AOC). A RCRA Facility Investigation (RFI) has been suggested at the Storm Water Surge Tank (SWMU No. 1), Land Irrigation Area (SWMU No. 10), Waste Pile (SWMU No. 14), Effluent Ditch (SWMU No. 16), and Sewer System (SWMU No. 23). Further investigation is suggested for two AOCs; the Tank Car Loading Area and the Tank Farm Area.

The inactive Land Irrigation Area was previously used to spray irrigate facility wastewaters (process and runoff wastes) to evaporate and reduce organic (potentially hazardous) constituents. This pre-RCRA unit ceased operation prior to 1980. There is no documentation of waste analysis having been conducted for soils in this area.

The Effluent Ditch (SWMU 16) is an earthen, unlined ditch used to convey treated and untreated wastewaters to the Houston Ship Channel via NPDES permitted Outfall 001. The unit receives biological treatment plant effluent through NPDES Outfall 101. However, this unit also has the potential to receive wastewaters containing hazardous constituents and direct runoff from the adjacent product Tank Farm Area (Area of Concern B). Therefore this unit has been identified as a SWMU in this report. The Agency may wish to re-evaluate this position.

Wastes containing hazardous constituents collect in the Tank Farm Area as a result of spills and leaks from product tanks. This area is currently under corrective

action by the Texas Water Commission (TWC). Because dikes for the Tank Farm Area have chronically had erosion problems (also noted during the VSI) and freeboard reportedly is not always maintained, there is a potential for wastes to runoff from the tank farm directly to the Effluent Ditch.

The Tank Car Loading/Unloading Area (Area of Concern B) is a designated area for unloading products such as pitch, creosote and fine oils. Spills on the soils around the railroad tracks have been documented.

In addition, many of the wastes generated by this facility have the potential to contain semi-volatile organic compounds (polynuclear aromatic hydrocarbons). In most cases, these wastes are stored in open-top units. These units include SWMUs 1, 3-9, 12, 13, 16-18, and 21-22. The potential for release of these constituents to air has been determined to be moderate to high. As discussed with Burt Gorrod, U.S. EPA Region VI, air quality assessments may be warranted for each of these units to determine if hazardous constituents are being released in significant quantities.

Also, many of the wastewater treatment tanks (SWMUs 1, 3, 8, and 9) are located together and are open-topped. These units are subject to overflow causing a high potential for release to soil, ground water, and indirectly to surface water. It may be warranted to provide containment for this area to lessen the potential for release.

If you have any questions, please feel free to call me or Elani Gray, the Work Assignment Manager, who can be contacted at (713) 789-8050.

Sincerely,

Ann L. Anderson

Ann L. Anderson
Technical Director

Enclosure (as stated)

cc:

W. Luthans, EPA Region VI
L. Boada, EPA Region VI
J. Levin
J. Grieve
A. Schaffer (w/o attachments)
A. Williams (w/o attachments)
E. Gray, HLA-Houston

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RCRA FACILITY ASSESSMENT
PR/VSI REPORT

Koppers Company, Inc.
Industrial Road at Armco Steel Gate No. 2
Houston, Texas 77213
TXD008089021

Prepared for:

U.S. Environmental Protection Agency
Region VI
1445 Ross Avenue
Dallas, Texas 75202

Prepared by:

A. T. KEARNEY, INC.
Three Lagoon Drive
Redwood City, California 94065

and

HARDING LAWSON ASSOCIATES
6220 Westpark Drive, Suite 100
Houston, Texas

Contract No. 68-01-7374
Work Assignment No. R26-05-60

September 1988

DISCLAIMER

This report was prepared for the U.S. Environmental Protection Agency, Region VI (EPA) by A. T. Kearney, Incorporated in fulfillment of Contract No. 68-01-7374, Work/Project Assignment No. R26-05-60. The opinions, findings, and conclusions expressed herein are those of the contractor and not necessarily those of the EPA or other cooperating agencies. Mention of company or product names is not to be considered an endorsement by the EPA.

This document is intended to assist EPA and State personnel in exercising the discretion conferred by regulation in developing requirements for an owner/operator to conduct the RCRA Facility Investigation (RFI) pursuant to 40 CFR 264. EPA will not necessarily limit RFI or other requirements to those that correspond with the recommendations set forth herein. EPA and State personnel must exercise their technical judgement in using the RCRA Facility Assessment report as well as other relevant information in determining what RFI or other requirements to include in a permit or an order.

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1.0 INTRODUCTION

This section of the Preliminary Review and Visual Site Inspection (PR/VSI) report covers the purpose and scope of the RCRA Facility Assessment (RFA) program. The contents of the other sections of this report are also described.

1.1 Purpose and Scope of the RFA Program

The 1984 Hazardous and Solid Waste Amendments (HSWA) provide new authority to EPA to require comprehensive corrective actions on solid waste management units (SWMUs) and other areas of concern at interim status hazardous waste management facilities, particularly those applying for RCRA permits. These corrective actions are intended to address unregulated releases of hazardous constituents to air, surface water, soil, and groundwater, as well as the generation of subsurface gas.

One of the major segments of EPA's corrective action program consists of RCRA Facility Assessments (RFAs) to identify releases or potential releases requiring further investigation.

According to EPA's RCRA Facility Assessment Guidance Document, the four purposes of an RFA are to:

1. Identify and gather information on releases at RCRA-regulated facilities;
2. Evaluate solid waste management units and other areas of concern for releases to all media and regulated units for releases other than to groundwater;
3. Make preliminary determinations regarding releases of concern and the need for further actions and interim measures at the facility; and
4. Screen from further investigation those SWMUs which do not pose a threat to human health and the environment.

The three basic steps of an RFA consist of a preliminary review (PR) of available information, a visual site inspection (VSI) to obtain additional information on releases, and a sampling visit (SV) to fill data gaps by obtaining field and analytical data.

1.2 Contents of This Report

This report presents the results of the PR and VSI of the Koppers Company, Incorporated (Koppers) facility in Houston, Texas. The principal sources of information used in conducting the PR were obtained during a search of relevant files at the EPA Regional Office in Dallas, Texas, as well as the Texas Water Commission (TWC) headquarters in Austin. These files included RCRA, solid waste management and wastewater (NPDES) files.

The VSI was conducted August 9, 1988. Individuals representing Koppers included Kevin Fitzgerald, Plant Manager, Walt Geels, Assistant Plant Manager, and Jordan Dern of Keystone Laboratories, consultant to Koppers. The A.T. Kearney representatives were Jeffrey Haag and Elani Gray of Harding Lawson Associates.

Section 2.0 of this report contains a description of the Koppers facility, including its historical and current operations. Individual SWMUs are identified in Section 2.0 along with a summary description of the wastes managed by the facility. Section 3.0 provides an overview of the environmental setting of the facility, comprising meteorology, air quality, floodplain and surface water, geology, soils, groundwater and receptor information. In Section 4.0, a broad assessment of release pathways is made, covering the potential for releases to soil, groundwater, surface water, air and through generation of subsurface gas. Section 5.0 contains detailed discussions of each SWMU, and Section 6.0 covers other areas of concern (i.e., releases from production areas, spills, and evidence of contamination

of unknown origin). Section 7.0 contains conclusions and suggested further actions for each SWMU. Section 8.0 provides a list of references. The VSI photograph log and trip summary are presented as appendices to the report.

2.0 FACILITY DESCRIPTION

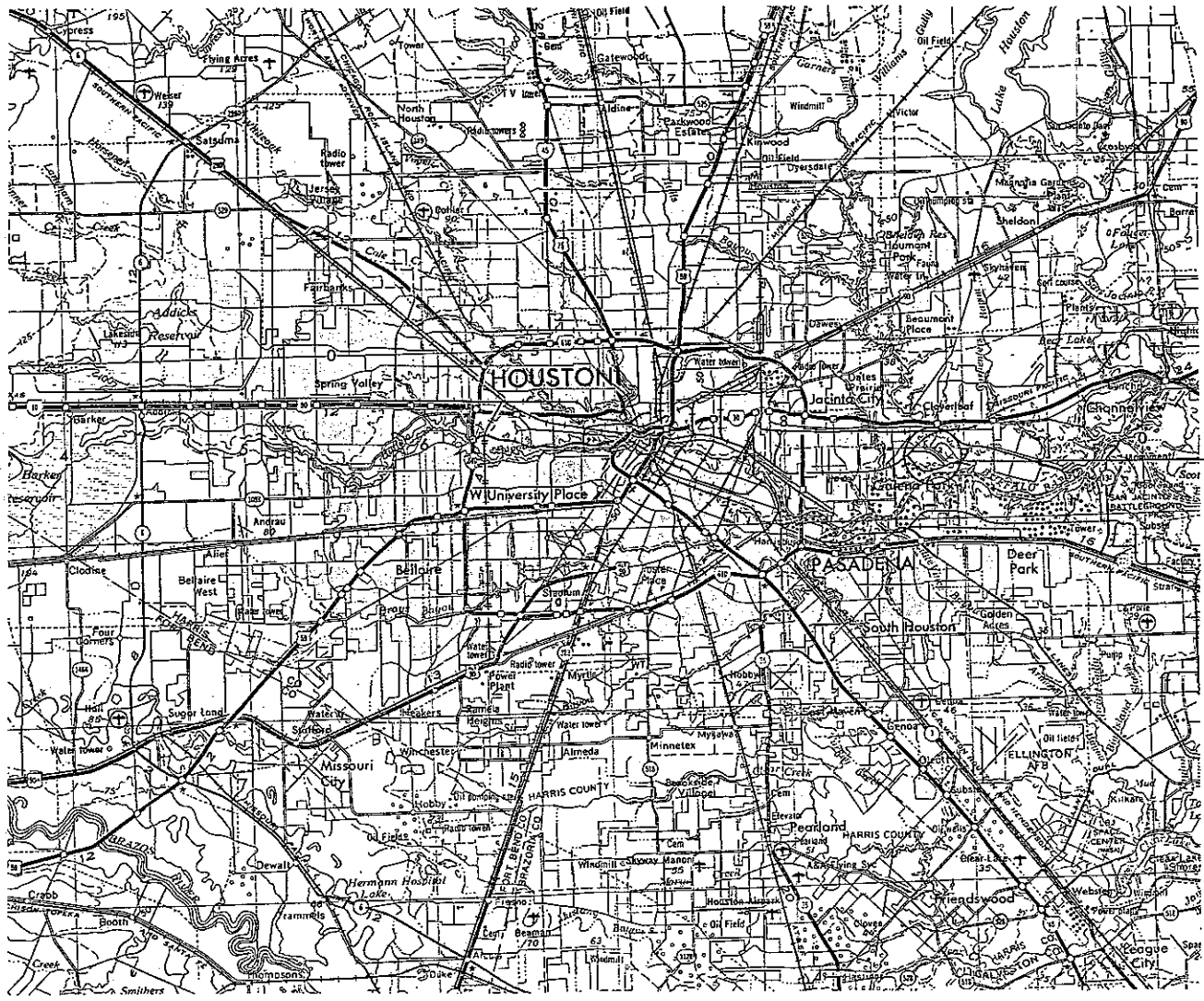
This section of the PR/VSI report covers the location of the facility, historical and current operations, brief descriptions of the SWMUs that were identified and wastes managed at the facility.

2.1 Location

The Koppers facility is located within the old Armco Steel Plant at Industrial Road in Houston, Harris County, Texas (see Figure 2-1). The facility is located approximately one mile north of the Houston Ship Channel at latitude 29 degrees, 44 minutes, 32 seconds and longitude 95 degrees, 11 minutes, 58 seconds. The facility covers an area of approximately 11 acres (54).

2.2 Historical and Current Operations

The Koppers facility processes crude coal tar to produce a variety of products including several grades of creosote, roofing products, refined chemical oil, and industrial pitches. In addition, the facility operates an enamel coatings plant. Pipeline enamel is manufactured in a batch process (53). The Koppers Company began operations at this site in 1963 and in 1988, the



KOPPERS COMPAN

FIGURE 2-1 KOPPERS COMPANY INCORPORATED
HOUSTON, TEXAS
REFERENCE USGS CONTOUR MAPS

company was bought out by Beazer, Incorporated; however, the plant is currently in operation as the Koppers Company.

2.3 Identification of Solid Waste Management Units

Twenty-three solid waste management units have been identified at the Koppers facility as a result of the PR and VSI. Of these, four units are inactive. A list of SWMUs is presented in Exhibit 2-1 which identifies which units are RCRA-regulated. The locations of all SWMUs are identified in Figure 2-2.

Waste management units exist at the Koppers facility to collect, store, and treat wastes generated from the production of creosote and related products. Wastes generated from the distillation process, together with runoff wastes from the process area and tank and truck loading areas are collected in the Process Area Trench System (SWMU 22) and conveyed to one of two sumps: S-500 (SWMU 12) or S-400 (SWMU 13).

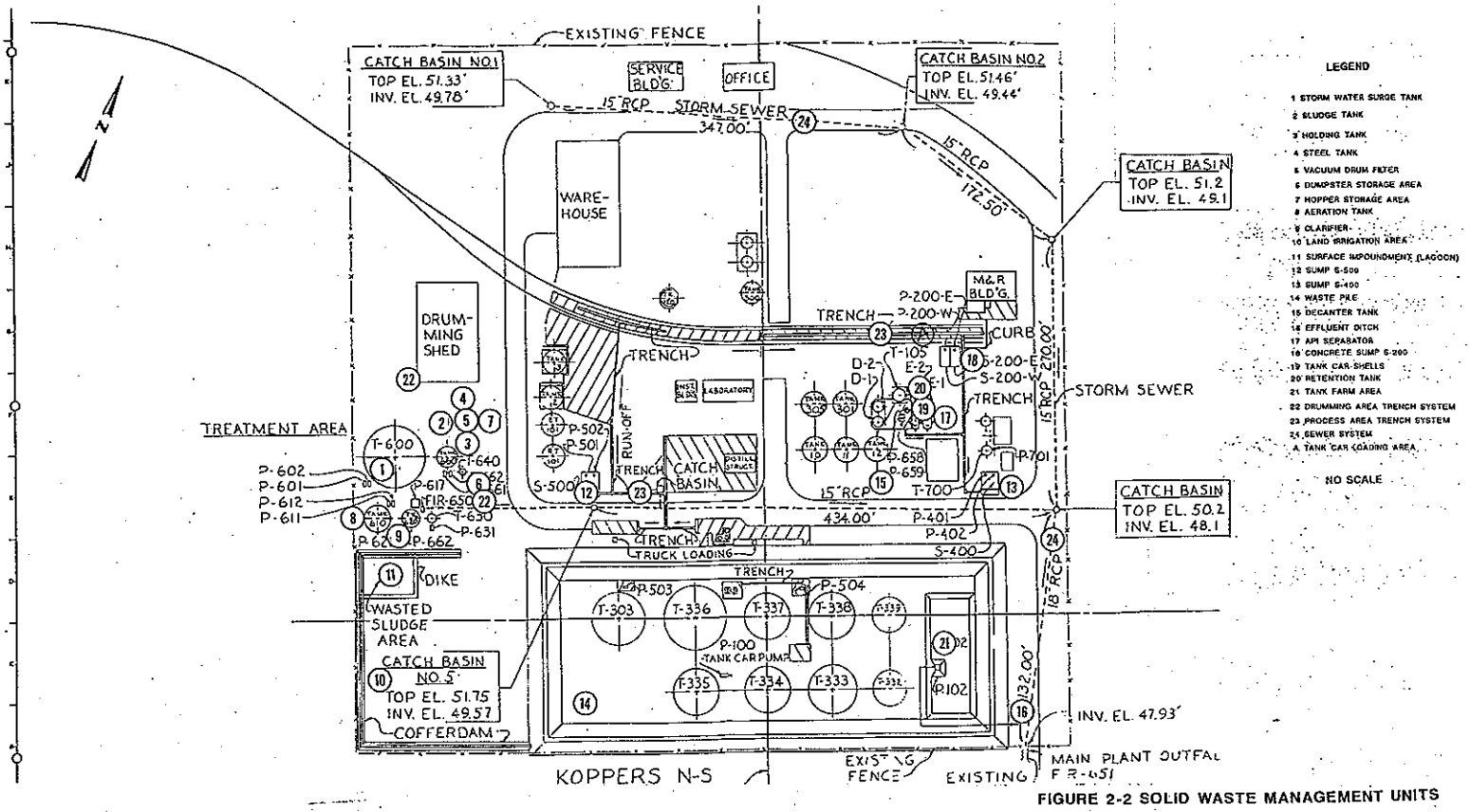


FIGURE 2-2 SOLID WASTE MANAGEMENT UNITS

KOPPERS COMPANY INCORPORATED

HOUSTON, TEXAS

REFERENCE 48

EXHIBIT 2-1

Solid Waste Management Units at the Koppers Facility

SWMU No.	Name	Status	RCRA Regulated
1	Storm Water Surge Tank, T-600	Active	No
2	Sludge Tank, T-630	Active	No
3	Holding Tank, T-660	Active	No
4	Steel Tank	Active	No
5	Vacuum Drum Filter	Active	No
6	Dumpster Storage Area	Active	No
7	Hopper Storage Area	Active	Yes
8	Aeration Tank	Active	No
9	Clarifier	Active	No
10	Land Irrigation Area	Inactive	No
11	Surface Impoundment	Inactive	Yes
12	Sump S-500	Active	No
13	Sump S-400	Active	No
14	Waste Pile	Inactive	No
15	Decanter Tank	Active	No
16	Effluent Ditch	Active	No
17	API Separator	Active	No
18	Concrete Sump S-200	Active	No
19	Tank Car Shells	Inactive	No
20	Retention Tank T-105	Active	No
21	Drumming Area Trench System	Active	No
22	Process Area Trench System	Active	No
23	Sewer System	Active	No

Areas of Concern

A	Tank Car Loading/Unloading Area
B	Tank Farm Area

Waste are routed from these collection points to the Holding Tank (SWMU 3) prior to discharge to the Storm Water Surge Tank, T-600 (SWMU 1). This tank is the first in a series of wastewater treatment facilities at the Koppers plant and is used for oil/water separation.

Wastewater is collected from the Storm Water Surge Tank from beneath the oil layer and directed to the Aeration Tank (SWMU 8) via aboveground pipeline where it is agitated. Oil from the Storm Water Surge Tank is transferred to the API Separator (SWMU 17) for further treatment (oil/water separation).

The waste stream from the Aeration Tank is gravity fed to the Clarifier (SWMU 9) for solids removal. Dry solids are removed from this unit to adjacent dumpsters (Dumpster Storage Area - SWMU 6). Sludges are either pumped back to the Aeration Tank or are removed to the Sludge Tank (SWMU 2). Clarified wastewater from this unit is sent to the treated effluent Outfall 101.

Effluent and solids from the Sludge Tank are routed to the Vacuum Drum Filter (SWMU 5) for further treatment. Solids (K035) removed from the filter are temporarily stored in hoppers (Hopper Storage Area - SWMU 7) as they

are generated, and then placed in dumpsters (Dumpster Storage Area - SWMU 6) prior to off-site disposal. Wastewater from the Vacuum Drum Filter is discharged to the treated effluent Outfall 101.

In addition to the dumpster that receives dry sludge cake and filter cake, a dumpster is present in the Dumpster Storage Area (SWMU 6) for containment of spill material (creosote, creosote by-products, and contaminated soils). Both dumpsters are for less than 90-day storage.

Outfall 101 (treated effluent) runs into the Effluent Ditch (SWMU 16) which serves as Outfall 001 (main plant outfall) at the facility property line. The effluent ditch runs a course (approximately one mile) to the Houston Ship Channel.

The Drumming Area Trench System (SWMU 21) is used to collect spills and leaks from the product drumming area and possibly runoff from the wastewater treatment facilities. It reportedly discharged to Outfall 001.

The Concrete Sump, S-200 (SWMU 18) receives contaminated process wastewater (including the first distillate off of

the process), laboratory waste, waste oils from maintenance operations, and sanitary wastes, all from the Process Area Trench System (SWMU 22) or the Sewer System (SWMU 23). From this unit, these wastes are directed to the adjacent Retention Tank (SWMU 20) for oil/water separation. The layers are removed and routed to product storage. Wastewater is fed to the API Separator (SWMU 17) for further treatment. Oil removed from the API Separator is routed to a tar distillate tank (product tank) for reuse. The wastewater stream is routed to the Aeration Tank (SWMU 8) for wastewater treatment.

The Steel Tank (SWMU 4) is in place to collect runoff from the wastewater treatment system (sludge tank, vacuum drum filter, hoppers) containment area. This wastewater stream is routed to the Storm Water Retention Tank (SWMU 1).

The Decanter Tank (SWMU 15) receives the first distillate off the process distillation column for oil/water separation. Oils from this unit are routed to tar storage (for further processing). Wastewater is routed to the Retention Tank (SWMU 20) prior to the API Separator (SWMU 17).

The Surface Impoundment-Lagoon was previously used to store sludges (K035) skimmed from the Clarifier (SWMU 9). It was taken out of operation in 1983, however, it still exists on-site. Closure plans for this unit were submitted and approved in 1986. Closure was reportedly in progress during the VSI, however, no wastes have been removed from this unit. The facility is currently awaiting TWC approval of an amended closure plan which involves capping the unit with on-site material. The unit currently receives rainwater.

The Tank Car Shells (SWMU 19) are a historical SWMU. They were two old tank cars used for oil/water separation prior to installation of the API Separator. These units were replaced in 1983. They were not in existence during the VSI.

2.4 Summary of Wastes Handled

The Koppers facility receives crude coal tar as a raw product for the production of various grades of creosote, industrial pitches, roofing material, chemical oils, and pipeline enamel. The raw materials are distilled and blended to produce the final products.

The Tank Farm (Area of Concern B) is a series of tanks used for product storage. Because these tanks have spills and leaks which accumulate in the diked area, it is considered an Area of Concern. Ponded water and oil stains were observed in the northeast portion of this area during the VSI.

A Waste Pile (SWMU 14) formerly existed in the south portion of the tank farm area. This waste pile was believed to have been used to store creosote contaminated soil prior to the use of dumpsters. This unit was not in existence during the VSI. The facility representatives could not determine its former location.

In addition to the Waste Pile, three other inactive units were identified at the Koppers facility. They include a Land Irrigation Area (SWMU 10), a Surface Impoundment-Lagoon (SWMU 11), and the Tank Car Shells (SWMU 19).

The Land Irrigation Area was used prior to the installation of the wastewater treatment system. Effluent waste was spray irrigated onto the south corner of the Koppers property in order to evaporate and reduce organic constituents. This practice ceased prior to 1980. The area was never formally closed.

For the most part, wastes generated by this facility consist of a combination of process waste streams and storm water runoff (contaminated and uncontaminated).

The distillation process results in the generation of a process waste stream (first distillate off the fraction tower) which contains heavy oils, light oils, and water. This stream is treated (oil/water separation) and oils are collected for further processing. Wastewater is routed to the wastewater treatment system for aeration and pH adjustment prior to permitted discharge.

Facility storm water is reportedly segregated into contaminated and uncontaminated storm water runoff. Supposedly, contaminated runoff is treated through the wastewater treatment system and uncontaminated runoff is discharged to the permitted outfall.

A runoff waste stream generated from the spills and leaks from the Tank Farm is routed through the Sump System to the wastewater treatment system. Wastes from this area have been analyzed by TWC and found to contain the hazardous constituents anthracene, chrysene, fluoranthene, naphthalene, and other hydrocarbons at significant levels (49).

Three waste streams are generated from the waste treatment system: wastewater, waste sludges, and filter cake. Wastewater is aerated, pH adjusted, filtered, and discharged via permitted Outfall 001. Waste sludges (K035) are decanted and returned to the wastewater treatment system (Aeration Tank - SWMU 8) for further treatment or are stored in the Sludge Tank (SWMU 2) prior to being filtered. Filter cake is generated from the Vacuum Filter Press (SWMU 5) and temporarily stored in hoppers and dumpsters for off-site disposal. All of the wastes have the potential to contain hazardous constituents associated with creosote production such as creosote (U051), chrysene, napthalene, fluoranthene benzo(b) fluoranthene, benzo(a)pyrene, indeno (1,2,3-cd) pyrene, benzo(a)anthracene, dibenzo(a)anthracene, and acenaphthalene.

In addition to these wastes, a laboratory waste stream and a waste oil stream (from equipment maintenance operations) are generated. The laboratory waste stream is generated as a result of chemical testing and may include acetone, xylene, creosote (U051), crude coal tar, toluene (U220), and quinoline. The waste oil has never been analyzed (according to facility representatives), but may contain lead.

3.0 ENVIRONMENTAL SETTING

3.1 Meteorology

Due to the nearness of the Gulf of Mexico, Harris County has a marine climate characterized by the development of fogs and frequent rainfall. The temperature ranges from 25°F in the winter to 98°F in the summer. Rainfall is distributed evenly throughout the year and the average annual rainfall varies from 30 to 60 inches. Prevailing winds are from the southeast and south, except in January when high pressure areas and the subsequent polar air cause prevailing northerly winds. The prevailing winds average ten miles per hour.

3.2 Floodplain and Surface Water

The Koppers facility is located approximately one mile north of the Houston Ship Channel. The ship channel serves as a commercial shipping route into the Houston area and eventually discharges to Galveston Bay (approximately 10 miles south of the Koppers facility).

The facility is located within the Floodplain Zone B, outside the 100-year floodplain. The property is within the San Jacinto River Basin - Segment 1006 (50).

3.3 Geology and Soils

The surficial soils in the area of the facility are classified as belonging to the Midland-Beaumont-Urban Association. This association consists of nearly level to gently sloping loamy soils on upland prairies. The Bernard clay loam, in general, has a moderately high shrink-swell potential with very slow permeability (0.06 in/hr). The soil is generally alkaline, with calcium carbonate and iron-manganese concretions, and slickensides may be present in the soil profile.

Soil boring and monitoring well information was available for review at the Koppers-Houston facility. A ground-water monitoring system has been installed for the Surface Impoundment (SWMU-11) and the Tank Farm Area (Area of Concern B). Based on the information obtained from the Surface Impoundment monitoring well installation, subsurface materials consist of fat clays to sandy silts (MW-1, MW-2), and of fat clays to silty

clays (MW-3, MW-4). The presence of slickensides and organics was noted in MW-3 and MW-4. The monitoring well installations were drilled to only -20 feet (35, 39).

3.4 Groundwater

The Koppers facility is located over the Chicot aquifer. This aquifer is divided into an upper and lower unit. The top of the upper unit of the aquifer is approximately 100 feet below land surface. This unit is composed of the Beaumont & Lissie formations. The lower unit is composed of the Alta Loma formation and is approximately 400 feet below land surface and is about 150 feet thick. The aquifer is composed of alternating sequences of clays, sands, and gravels. The primary water-bearing unit for the Chicot aquifer is the Alta Loma formation. The recharge zone for the Chicot aquifer is in the north-western portion of Harris County (108, 109).

The upper unit of the Chicot contains quantities of freshwater, but is not utilized because of the low yields from wells. This unit is present in most of Harris County.

The primary source of potable water in the county has been the lower unit of the Chicot aquifer. This unit is

locally designated the Alto Loma Sand. As a result of over-utilization of the Chicot Aquifer, the area near the Houston Ship Channel has suffered major subsidence problems.

Consequently, groundwater development and withdrawals have been regulated by the Harris-Galveston Subsidence Control District. This has lead to an overall restriction in use of groundwater in the area.

3.5 Receptor Information

The Koppers facility is located in an unzoned area which is basically industrial. The facility itself is located inside the boundaries of the abandoned Armco Steel Plant located south of Industrial Road. The steel plant property is currently leased to a variety of industrial facilities who share common entry gates and water supply systems. Approximately 20 people are employed by the Koppers plant and an estimated 300 persons are employed by facilities located on Armco Steel property.

A small (approximately 300 people) residential neighborhood is located to the north of Industrial Road, approximately one mile from the Koppers facility. This

residential area is supplied with drinking water from the City of Houston, which originates from Lake Houston approximately 20 miles to the north of the facility.

The Koppers plant operates a private water well for personal and industrial use. This well is reportedly registered with the City of Houston and is only used by the Koppers plant. In addition, the adjacent Hess Oil facility operates a water treatment system. Water is removed from the Houston Ship Channel, treated, and distributed to neighboring facilities to supplement their systems.

Surface water drainage from the Koppers facility is collected and flows through a permitted outfall. From the outfall, the water flows south to the Houston-Galveston Ship Channel, which is located approximately one mile south of the facility (35, 37). This ship channel is mainly used for commercial shipping, but recreational sports (swimming and fishing) also take place in portions of this water body. The ship channel eventually discharges to Galveston Bay which is commercial and recreational.

4.0 RELEASE PATHWAYS

4.1 Air Release Pathways

There are several units at the Koppers facility which provide possible release pathways for hazardous constituents to air. Semi-volatile compounds are present in the wastewater treatment sludges generated from the production of creosote (K035) and in creosote (U051) itself. These waste streams and wastes derived from these streams are, for the most part treated or stored in open-top facilities. The potential for release from these units has been determined to be moderate to high depending on whether treatment takes place in the unit (such as in the Aeration Tank - SWMU 8), etc.

4.2 Surface Water Pathways

All facility effluent is collected and either treated and/or discharged directly to the Effluent Ditch (SWMU 16). This ditch serves as a conduit to the Houston Ship Channel through permitted (NPDES) Outfall 001.

The Koppers facility has a NPDES permit to discharge specified quantities of effluent to the Houston Ship Channel through outfalls 001 and 101. The discharge from Outfall 101 is biological treatment plant effluent and the discharge from Outfall 001 is storm water comingled with utility water and the biological treatment plant effluent (45)

The limitations on the effluent discharged include the following:

From : June 25, 1985		To: Expiration Date
Outfall	Parameter	Limitation
101	Ammonia, avg.	3.7 lbs/day
101	Ammonia, max.	7.3 lbs/day
101	Cyanide, avg.	0.019 lbs/day
101	Cyanide, max.	0.043 lbs/day
101	Cyanide, max.	0.41 lbs/day
101	BOD_5, avg.	8.3 lbs/day
101	BOD_5, max.	16.5 lbs/day
101	TSS, avg.	8.3 lbs/day
101	TSS, max.	16.5 lbs/day
001	Total Phenol, max.	0.5 mg/l
001	Naphthalene	0.1 mg/l

An EPA administrative order was issued April 1, 1986 citing ammonia, cyanide, and TSS violations at the Koppers facility from September 1985 through January 1986. On May 14, 1986, Koppers submitted a response detailing corrective actions taken to come into compliance. On July 23, 1986, Koppers notified the EPA that the actions taken by the facility were successful and compliance had been achieved (90).

Violations of the permitted limitations include the following:

Outfall	Date	Parameter	Limitation
101	7/86	Ammonia, avg.	7.9 lbs/day
101	7/86	Ammonia, max.	14.3 lbs/day
101	8/86	Ammonia, avg.	11.0 lbs/day
101	8/86	Ammonia, max.	20.2 lbs/day
101	9/86	Ammonia, avg.	6.1 lbs/day
101	9/86	Ammonia, max.	16.6 lbs/day
101	10/86	Ammonia, avg.	5.2 lbs/day
101	10/86	Ammonia, max.	13.3 lbs/day
101	7/86	Cyanide, avg.	0.033 lbs/day
101	7/86	Cyanide, max.	0.052 lbs/day
101	7/86	Cyanide, avg.	0.59 mg/l
101	8/86	Cyanide, max.	0.086 lbs/day
101	8/86	Cyanide, max.	0.202 lbs/day
101	8/86	Cyanide, max.	3.2 mg/l
101	9/86	Cyanide, avg.	0.151 lbs/day
101	9/86	Cyanide, max.	0.399 lbs/day
101	9/86	Cyanide, max.	3.55 mg/l
101	10/86	Cyanide, avg.	0.033 lbs/day
101	10/86	Cyanide, max.	0.111 lbs/day
101	10/86	Cyanide, max.	0.82 mg/l
101	11/86	Cyanide, avg.	0.134 lbs/day
101	11/86	Cyanide, max.	0.524 lbs/day
101	11/86	Cyanide, max.	4.42 mg/l

Outfall	Date	Parameter	Limitation
101	9/86	BOD_5, avg.	12.7 lbs/day
101	9/86	BOD_5, max.	24.5 lbs/day
101	9/86	TSS, avg.	18 lbs/day
001	9/86	Total Phenol, max.	2.5 mg/l
001	10/86	Total Phenol, max.	1.52 mg/l
001	9/86	Naphthalene, max.	0.5 mg/l

Due to these violations, another administrative order was issued by the EPA on February 23, 1987, requiring that the Koppers facility submit a compliance schedule for achieving complete compliance with the permit (90).

In April 1987, a high level of Total Suspended Solids (TSS) of 22.8 pounds/day from Outfall 101 was reportedly caused by a filter cloth failure at a vacuum filter press used to polish the effluent. The cloth was changed, resolving the problem. An ammonia excursion of 33.3 pounds/day from Outfall 101 was also reported. It was reportedly caused by a sudden high ammonia loading which shocked the treatment system. Flows were reduced to resolve the problem. Additionally, a cyanide excursion of 0.80 pounds/day and 0.52 milligrams/liter from Outfall 101 was reported, however, the cause is unknown (93).

In July 1987, a level of TSS of 18.0 pounds/day from Outfall 101 was reportedly caused by changing from hydrated lime to sodium hydroxide solution for pH control, which affected the settling properties of the activated sludge. Increasing the polymer concentration returned the system to normal. An excursion of cyanide of 0.079 pounds/day at Outfall 101 was also reported, however, the cause is unknown (94).

According to a Texas Water Commission Inspection Report dated March 1, 1988, cyanide levels were measured at Outfall 001 at less than 0.02 milligrams/liter. The levels of cyanide at Outfall 101 were not measured. According to the Koppers facility, no penalties had been imposed as a result of the February 23, 1987, Administrative Order at the time of the inspection. The Koppers facility was in the process of negotiation on legal and technical issues.

Additionally, a pilot plant for cyanide elimination was installed in January 1988. At the time of the inspection the pilot plant was not in operation due to plugging problems. No reliable data had yet been collected from this project (104).

4.3 Soil Pathway

The surficial soils at the site consist of sandy clay and clay soils. These soils are classified as belonging to the Midland-Beaumont-Urban Association and are poorly drained. Subsurface soils are seen (from site boring log information) to consist of "fat" clays to sandy silts and "fat" clays to silty clays. The clays were noted to be slickensided. These slickensided clays as well as the sandy silts may serve as conduits for oily materials such as creosote.

4.4 Groundwater Pathway

The nearest aquifer beneath the Koppers facility is the upper unit of the Chicot Aquifer. This aquifer is generally not used as a potable water supply due to its low yielding nature. A significant source of water for the area, the lower unit of the Chicot is situated approximately 400 feet below the ground surface. This lower aquifer is most likely unaffected by releases from the facility due to clay confining units which exist in the Beaumont Clay formation. However, since this clay unit is not continuous, the possibility exists that groundwater contamination could migrate to this unit.

4.5 Subsurface Gas Generation

Volatile and semi-volatile constituents handled at this facility may pose a potential for the generation of subsurface gas. However, all but two units were determined to open to the atmosphere, aboveground, or underlain by concrete, and therefore are likely to present a low to moderate potential for subsurface gas generation. The Sewer System is located underground and constructed of reinforced concrete. Since this unit is located underground, and could not be observed during the VSI, the integrity of the unit could not be verified. The potential for subsurface gas generation from the Waste Pile (SWMU 14) could not be evaluated due to lack of information on containment.

5.0 DESCRIPTION OF SOLID WASTE MANAGEMENT UNITS

5.1 SWMU 1 - Storm Water Surge Tank (T-600) (Photos 1, 2, 3, 10, and 12)

5.1.1 Information Summary

Unit Description: This active unit is a 35-foot-high cylindrical carbon steel tank with a capacity of 600,000 gallons. It is used for the storage of contaminated storm water runoff from Sumps S-400 (SWMU 13) and S-500 (SWMU 12). It also receives wastewater directly from the Steel Tank (SWMU 4). The unit is situated on a concrete pad. It is an open-topped tank with a fluid level indicator. This unit is equipped with an overflow pipe which extends approximately 8 feet below the top of the tank. The pipe extends below the "oil" layer in order to decant wastewater only. This wastewater overflow discharges directly onto the ground at the base of the tank. The main wastewater discharge is to the Aeration Tank (SWMU 8). The oil layer discharges to the API Separator (SWMU 17).

Dates of Operation: This unit has been in operation since 1978. It is currently in operation. There are no plans for closure.

Release Controls: This unit is constructed of steel and is situated on a concrete pad. The drainage from this area is to the Drumming Area Trench System (SWMU 21).

Wastes Managed: This unit receives contaminated storm water runoff from the plant sump system. These wastewaters may contain hazardous constituents associated with creosote production such as creosote (U051), chrysene, naphthalene, fluoranthene, benzo(b)fluoranthene, benzo(a)pyrene, indeno (1,2,3,-cd) pyrene, benzo(a)anthracene, dibenzo(a)anthracene, and acenaphthalene.

History of Releases: There is a documented release from this area which occurred in November 1986 (70). It involved a release of approximately 20,000 gallons of wastewater (contaminated storm water) as a result of heavy rainfall. According to facility representatives, this unit overflows approximately one time per year. During the VSI, there was no evidence of release observed.

5.1.2 Release Potential

- Soil/Groundwater: Since this unit contains hazardous constituents, the overflow discharge pipe is directed to the ground surface, and the

unit reportedly overflows periodically, there is a high potential for release of hazardous constituents to the soil/groundwater.

- Surface Water: The Drumming Area Trench System receives runoff from this area and the unit is not located within close proximity to any surface water body. However, in the event of a major overflow, the released materials may make their way to the Effluent Ditch and release from Outfall 001 (such as occurred in 1986 when 20,000 gallons of wastewater was released from this unit). Therefore, the potential for release of hazardous constituents from this unit to surface water is moderate to high.

- Air: Since this unit is an open-top structure which manages waste containing semi-volatile organics, the potential for release of hazardous constituents is moderate.

- Subsurface Gas: Since this unit is situated on a concrete base, the potential for subsurface gas generation is moderate.

5.2 SWMU 2 - Sludge Tank (T-630) (Photo 4)

5.2.1 Information Summary

Unit Description: This active unit is approximately 8 feet 10 inches high and is 8 feet in diameter. The bottom of the tank has a 60 degree cone with a vertex bottom. It has a 4,979-gallon capacity. The unit receives excess treatment sludges from the Clarifier (SWMU 9). According to the facility representatives, this is a non-RCRA regulated unit, considered part of the wastewater treatment system. It is constructed of carbon steel and is elevated on steel supports. It has a closed-top and above-ground steel piping. The unit is situated within a concrete area which drains to the Steel Tank (SWMU 4).

Dates of Operation: The sludge tank was installed in 1978 and put into operation in 1979. This unit is still in operation. There are no plans for closure.

Release Controls: The unit is located on a concrete base and is surrounded by a concrete pad with 6-inch concrete curbing. Drainage is collected in the Steel Tank (SWMU 4) and is pumped to the Storm Water Surge Tank (SWMU 1).

Wastes Managed: This unit receives wastewater treatment sludge (K035) from the Clarifier (SWMU 9) which contains hazardous waste constituents associated with creosote (U051) production. These constituents include creosote, chrysene, naphthalene, fluoranthene benzo (b) fluoranthene, benzo (a) pyrene, indeno (1,2,3,-cd) pyrene, benzo (a) anthracene, dibenzo (a) anthracene, and acenaphthalene.

History of Releases: There have been no known releases from this unit. There was no evidence of release during the VSI.

5.2.2 Release Potential

- Soil/Groundwater: This unit is elevated and situated over a concrete containment area. Drainage from this area is collected and routed to the Steel Tank (SWMU 4) which is enclosed by concrete. Therefore, the potential for release of hazardous constituents to soil/groundwater is low.

- Surface Water: Since potential runoff from this unit is contained by concrete curbing and collected in the Steel Tank (SWMU 4), the potential for release of hazardous constituents to surface water is low.

- Air: Since this unit is totally enclosed, the potential for release of hazardous constituents to air is low.

- Subsurface Gas: Since this unit is elevated and underlain with concrete, the potential for subsurface gas generation is low.

5.3 SWMU 3 - Holding Tank (T-660) (Photos 3, 5, and 10)

5.3.1 Information Summary

Unit Description: This active unit is an open-topped carbon steel tank situated on a concrete base. It receives wastewater from the Sump System (S-400 and S-500 - SWMUs 12 and 13) for storage prior to discharge to the Storm Water Surge Tank (SWMU 1). This unit is approximately 24 feet in height and 20 feet in diameter. It has a maximum capacity of 56,400 gallons. This unit is equipped with aboveground steel piping.

Dates of Operation: The holding tank became operational in 1979. It is still in operation. There are no plans for closure.

Release Controls: This unit is constructed of carbon steel and is situated on a concrete base. Drainage from this unit is to the Drumming Area Trench System (SWMU 21).

Wastes Managed: This unit receives a waste stream from the Sump System (S-400 and S-500). Hazardous constituents which may be present in this stream include creosote (U051),

chrysene, naphthalene, fluoranthene benzo (b) fluoranthene, benzo (a) pyrene, indeno (1,2,3,-cd) pyrene, benzo (a) anthracene, dibenzo (a) anthracene, and acenaphthalene.

History of Releases: There have been no documented releases from this unit. No evidence of releases were observed during the VSI.

5.3.2 Release Potential

- Soil/Groundwater: Since the unit is an open-top tank, apparently lacking a fluid level indicator or an overflow alarm mechanism, the potential for release of hazardous constituents to the soil and groundwater is moderate.

- Surface Water: Since the area in which this unit is located drains to the drumming area trench system, the potential for release of hazardous constituents to the surface water from this unit is low.

- Air: Since this unit stores wastes potentially containing semi-volatile organics and is an open-top structure, the potential for release of hazardous constituents to air is moderate.

- Subsurface Gas: Since this unit is situated on a concrete base, the potential for subsurface gas generation is low.

5.4 SWMU 4 - Steel Tank (Photos 6 and 7)

5.4.1 Information Summary

Unit Description: This active unit is a cylindrical steel tank which is open-topped. It is 3 feet in diameter and 6 feet in height. The tank is equipped with a water level indicator and an automatic pumping system which pumps directly to the Storm Water Surge Tank (SWMU 1). It is situated below grade inside an open-top concrete sump. The sump measures 25 feet by 10 feet and is approximately 6 feet deep. The sump is constructed of 6-inch reinforced concrete. Collected liquids are vacuum pumped to the Storm Water Surge Tank (SWMU 1).

Dates of Operation: According to facility representatives, this unit is believed to have begun operation in 1963. It is still in operation. There are no plans for closure.

Release Controls: This unit is located within a concrete sump which would collect any spills or overflows.

Wastes Managed: This unit receives filtered wastewater from the Vacuum Drum Filter (SWMU 5). It also receives spills and storm water runoff from the containment area for the Vacuum Drum Filter (SWMU 5), Dumpster Storage Area (SWMU 6), and the

Sludge Tank (SWMU 2). This waste has the potential to contain the hazardous constituents creosote (U051), chrysene, naphthalene, fluoranthene benzo (b) fluoranthene, benzo (a) pyrene, indeno (1,2,3,-cd) pyrene, benzo (a) anthracene, dibenzo (a) anthracene, and acenaphthalene.

History of Releases: There have been no known releases from this unit. During the VSI, liquids were observed in the containment sump. According to facility representatives, this liquid was rainwater.

5.4.2 Release Potential

- Soil/Groundwater: Since this unit is surrounded by a concrete sump system, the potential for release of hazardous constituents to soil/groundwater is low.

- Surface Water: Since this unit is below grade and surrounded by a concrete sump (which would collect any potential spills or overflows), the potential for release of hazardous constituents to surface water is low.

- Air: Since this unit is open to the atmosphere and receives wastewater in which semi-volatile wastes may be present, the potential for release of hazardous constituents to air is moderate.

- Subsurface Gas: Since this unit is open to the atmosphere and underlain by 6-inch reinforced concrete, the potential for subsurface gas generation is low.

5.5 SWMU 5 - Vacuum Drum Filter (Photos 8 and 9)

5.5.1 Information Summary

Unit Description: This active unit is a galvanized steel, horizontally oriented rotary drum vacuum filter. It has a capacity of approximately 20 gallons per minute. The dimensions of this unit are 7 feet 10 inches (diameter) by 13 feet 3 inches by 8 feet 4 inches. This unit is considered to be part of the wastewater treatment system. It receives wastewater from the Sludge Tank (SWMU 2) and the Clarifier (SWMU 9). Filter cake is scraped from the drum and deposited into one of two hoppers (Hopper Storage Area - SWMU 7) for temporary (less than 90-day) storage.

Dates of Operation: This unit was put into service in 1968. It is currently in service. There are no plans for closure.

Release Controls: This unit is located adjacent to a hopper which receives the filter cake material. It is located on a concrete pad which has 6-inch concrete curbing around the unit. Filtered wastewater, together with spills and storm water runoff from this area, drain to the Steel Tank (SWMU 4) and concrete sump area.

Wastes Managed: This unit receives wastewater from the Clarifier (SWMU 9) and the Sludge Tank (SWMU 2). It may contain the hazardous constituents associated with creosote production such as creosote (U051), chrysene, naphthalene, fluoranthene benzo (b) fluoranthene, benzo (a) pyrene, indeno (1,2,3,-cd) pyrene, benzo (a) anthracene, dibenzo (a) anthracene, and acenaphthalene.

History of Releases: There have been no known releases from this unit. During the time of the VSI, there were no releases observed.

5.5.2 Release Potential

- Soil/Groundwater: Since this unit is situated on a concrete slab with containment, the potential for release of hazardous constituents to soil/groundwater is low.

- Surface Water: Since this unit is located inside a concrete curbed area and discharged wastewater is collected in the Steel Tank (SWMU 4), the potential for release of hazardous constituents to surface water is low.

- o Air: Since this unit may receive semi-volatile wastes, the potential for release of hazardous constituents to air is moderate.

- o Subsurface Gas: Since this unit is located above ground and is underlain with concrete, the potential for subsurface gas generation is low.

5.6 SWMU 6 - Dumpster Storage Area (Photos 3 and 10)

5.6.1 Information Summary

Unit Description: This active unit consists of two large dumpsters provided to the facility by Chemical Waste Management (CWM). The capacity of each dumpster ranges between 20 and 30 cubic yards, depending upon which size is delivered by CWM. Each dumpster is lined with hypalon to prevent waste leakage. These dumpsters are used to store waste for less than 90 days prior to off-site disposal by CWM.

Dates of Operation: This unit began operation in 1980, and is currently in operation. There are no plans for closure.

Release Controls: These dumpsters are located on a concrete pad with concrete curbing. The area has sloped ramps for truck access which drain to the Drumming Area Trench System (SWMU 21). The unit is also equipped with two individual covers to prevent rainwater infiltration into the dumpsters. The dumpsters are lined with chemical-resistant hypalon to prevent runoff and are removed by CWM within every 90 days.

Wastes Managed: One of the two dumpsters receives sludge filter cake (K035) from the Vacuum Drum Filter (SWMU 5) process. The second of the two dumpsters receives spill material from the plant processes which include but are not limited to: roofing pitch, spill clean-up material, tar distillate and sand, creosote and various fractions of creosote. These wastes may contain the hazardous constituents creosote (U051), chrysene, naphthalene, fluoranthene benzo (b) fluoranthene, benzo (a) pyrene, indeno (1,2,3,-cd) pyrene, benzo (a) anthracene, dibenzo (a) anthracene, and acenaphthalene.

History of Releases: There are no documented releases from this unit. During the VSI, there was no evidence of release.

5.6.2 Release Potential

- Soil/Groundwater: Since the dumpsters in this unit have liners and are underlain with concrete, the potential for release of hazardous constituents to soil/groundwater is low.

- Surface Water: The dumpsters in this unit have liners and the unit area is contained by concrete curbing. Runoff from the unit is directed to the

Drumming Area Trench System (SWMU 21). Therefore, the potential for release of hazardous constituents to surface water is low.

- Air: Since one of the dumpsters in this unit is used to manage waste which may contain volatile organics (spill dumpster), the potential for release of hazardous constituents from this dumpster is high. However, the other dumpster is used to store filter cake. Since volatile organics contained in the waste would most likely have been "driven off" before reaching this dumpster, the potential for release of hazardous constituents to air is low.

- Subsurface Gas: Since the dumpsters in this unit are underlain by concrete, the potential for subsurface gas generation is low.

5.7 SWMU 7 - Hopper Storage Area (Photos 8 and 9)

5.7.1 Information Summary

Unit Description: This active RCRA-regulated unit consists of two steel hoppers mounted on wheels that are used in association with the Vacuum Drum Filter (SWMU 5). Each of these hoppers has a capacity of approximately 2 cubic yards. The hoppers are open-topped; however, the area in which they are maintained is covered with a roof. These hoppers receive waste filter cake material from the Vacuum Drum Filter for satellite storage (less than 90 days) until the waste can be transferred to the dumpsters (Dumpster Storage Area - SWMU 6) for off-site disposal by Chemical Waste Management (CWM).

Dates of Operation: These hoppers have been in operation since 1986. They are currently in operation. There are no plans for closure.

Release Controls: This unit is located adjacent to the Vacuum Drum Filter (SWMU 5) and is contained by a concrete pad with 6-inch concrete curbing. This area is drained to the Steel Tank (SWMU 4) and concrete sump. The unit is covered with roofing.